AMENDMENT TO THE CLAIMS

This listing of claims will replace all prior versions of claims in the application.

Listing of Claims:

1. (Currently Amended) A bone implant comprising an unhydrated ~~a~~ calcium phosphate precursor capable of forming poorly-crystalline hydroxyapatite *in vivo* upon hydration at the implantation site, wherein the precursor has a calcium to phosphorous atomic ratio between about 1.2 and about 1.68, and

wherein the implant has a compressive strength of at least about 60 MPa.

2. (Original) The bone implant of claim 1, wherein the implant is a machined article.

3. (Original) The bone implant of claim 1, wherein the precursor comprises a first calcium phosphate in intimate mixture with a second calcium phosphate, the second calcium phosphate having a different calcium to phosphorous atomic ratio than the first calcium phosphate.

4. (Original) The bone implant of claim 1, wherein the precursor comprises a first calcium phosphate in intimate mixture with a second calcium phosphate, the second calcium phosphate having a different crystallinity that the first calcium phosphate.

5. (Original) The bone implant of claim 4, wherein the first calcium phosphate is an

amorphous calcium phosphate, and wherein the second calcium phosphate has greater crystallinity than the first calcium phosphate.

6. (Original) The bone implant of claim 5, wherein the first calcium phosphate has a calcium to phosphorous atomic ratio less than about 1.5.

7. (Original) The bone implant of claim 5, wherein the second calcium phosphate is selected from the group consisting of dicalcium phosphate dihydrate, calcium metaphosphate, heptacalcium phosphate, tricalcium phosphate, calcium pyrophosphate dihydrate, calcium pyrophosphate, and octacalcium phosphate.

8. (Original) The bone implant of claim 7, wherein the second calcium phosphate is dicalcium phosphate dihydrate.

9. (Original) The bone implant of claim 1, further comprising a biocompatible polymer powder.

10. (Original) The bone implant of claim 9, wherein the implant has a compressive strength of at least about 120 MPa.

11. (Original) The bone implant of claim 1, further comprising a biocompatible polymer fiber.

12. (Original) The bone implant of claim 11, wherein the implant has a compressive strength of at least about 120 MPa.

13. (Original) The bone implant of claim 1, wherein the implant has a compressive strength of at least about 120 MPa.

14-15 (Canceled)

16. (Currently Amended) A bone implant comprising:

(a) a first calcium phosphate that is an amorphous calcium phosphate; and

(b) in intimate mixture with the first calcium phosphate, a second calcium phosphate having greater crystallinity than the first calcium phosphate;

wherein the overall calcium to phosphorous atomic ratio is between about 1.2 and about 1.68 and said first and second calcium phosphates are unhydrated; and

wherein the implant has a compressive strength of at least about 60 MPa.

17. (Original) The bone implant of claim 16, wherein the first calcium phosphate has a calcium to phosphorous atomic ratio less than about 1.5.

18. (Original) The bone implant of claim 16, wherein the second calcium phosphate is selected from the group consisting of dicalcium phosphate dihydrate, calcium metaphosphate,

heptacalcium phosphate, tricalcium phosphate, calcium pyrophosphate dihydrate, calcium pyrophosphate, and octacalcium phosphate.

19. (Original) The bone implant of claim 18, wherein the second calcium phosphate is dicalcium phosphate dihydrate.

20. (Original) The bone implant of claim 16, further comprising a biocompatible polymer powder.

21. (Original) The bone implant of claim 20, wherein the implant has a compressive strength of at least about 120 MPa.

22. (Original) The bone implant of claim 16, further comprising a biocompatible polymer fiber.

23. (Original) The bone implant of claim 22, wherein the implant has a compressive strength of at least about 120 MPa.

24. (Original) The bone implant of claim 16, wherein the implant has a compressive strength of at least about 120 MPa.

25. (Currently Amended) A method of bone implantation comprising:

(a) providing a bone implant comprising an unhydrated ~~a~~ calcium phosphate precursor capable of forming poorly-crystalline hydroxyapatite *in vivo* upon hydration at the implantation site, wherein the precursor has a calcium to phosphorous atomic ratio between about 1.2 and about 1.68, and wherein the implant has a compressive strength of at least about 60 MPa; and

(b) securing the bone implant at a site requiring implantation,

whereby the precursor undergoes conversion to poorly-crystalline hydroxyapatite at the implantation site.

26. (Original) The method of claim 25, wherein conversion of the precursor to poorly-crystalline hydroxyapatite is completed in a time between about 2 weeks and about 6 weeks after securing the bone implant at the implantation site.

27. (Original) The method of claim 25, wherein conversion of the precursor to poorly-crystalline hydroxyapatite occurs at about body temperature but does not proceed significantly at room temperature.

28. (Currently Amended) A method of bone implantation comprising:

(a) providing a bone implant comprising:

(i) a first calcium phosphate that is an amorphous calcium phosphate; and

(ii) in intimate mixture with the first calcium phosphate, a second calcium phosphate having a greater crystallinity than the first calcium phosphate;

wherein the overall calcium to phosphorous atomic ratio is between about 1.2 and about 1.68 and said first and second calcium phosphates are unhydrated; and

wherein the implant has a compressive strength of at least about 60 MPa; and

(b) securing the bone implant at a site requiring implantation;

whereby the first and second calcium phosphates undergo conversion to poorly-crystalline hydroxyapatite upon hydration at the implantation site.

29. (Original) The method of claim 28, wherein conversion of the first and second calcium phosphates to poorly-crystalline hydroxyapatite is completed in a time between about 2 weeks and about 6 weeks after securing the bone implant at the implantation site.

30. (Original) The method of claim 28, wherein conversion of the precursor to poorly-crystalline hydroxyapatite occurs at about body temperature but does not proceed significantly at room temperature.

31. (Currently Amended) A method of spinal fusion comprising:

(a) providing a bone implant comprising an unhydrated ~~a~~ calcium phosphate

precursor capable of forming poorly-crystalline hydroxyapatite *in vivo* upon hydration at the implant site, wherein the precursor has a calcium to phosphorous atomic ratio between about 1.2 and about 1.68, and wherein the implant has a compressive strength of at least about 60 MPa; and

(b) securing the bone implant between adjacent spinal vertebrae to promote fusion of the vertebrae.

32. (Currently Amended) A method of spinal fusion comprising:

(a) providing a bone implant comprising:

(i) a first calcium phosphate that is an amorphous calcium phosphate; and

(ii) in intimate mixture with the first calcium phosphate, a second calcium phosphate having greater crystallinity than the first calcium phosphate;

wherein the overall calcium to phosphorous atomic ratio is between about 1.2 and about 1.68 and said first and second calcium phosphates are unhydrated; and

wherein the implant has a compressive strength of at least about 60 MPa; and

(b) securing the bone implant between adjacent spinal vertebrae to promote fusion of the vertebrae.

33. (Previously Presented) The bone implant of claim 1, further comprising a bone regenerative protein.

34. (Previously Presented) The bone implant of claim 16, further comprising a bone regenerative protein.

35. (Previously Presented) The method of claim 25, wherein the bone implant further comprises a bone regenerative protein that it delivered at the implantation site.

36. (Previously Presented) The method of claim 28, wherein the bone implant further comprises a bone regenerative protein that is delivered at the implantation site.

37. (New) The bone implant of claim 1, wherein said precursor comprises nanometer-scale crystals of about 26 nm long and about 8 nm wide.

38. (New) The bone implant of claim 16, wherein said precursor comprises nanometer-scale crystals of about 26 nm long and about 8 nm wide.

39. (New) The method of claim 25, wherein said precursor comprises nanometer-scale crystals of about 26 nm long and about 8 nm wide.

40. (New) The method of claim 28, wherein said precursor comprises nanometer-scale crystals of about 26 nm long and about 8 nm wide.

41. (New) The method of claim 31, wherein said precursor comprises nanometer-scale crystals of about 26 nm long and about 8 nm wide.

42. (New) The method of claim 32, wherein said precursor comprises nanometer-scale crystals of about 26 nm long and about 8 nm wide.